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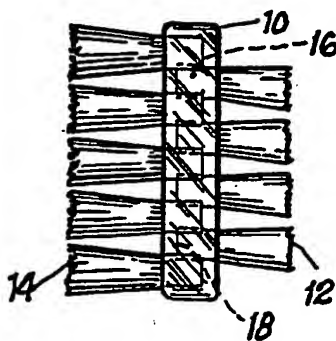
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(54) Title: DOUBLESIDED CHEWABLE ORAL BRUSH



(57) Abstract

A brush with no handle is provided for usefully contained within the mouth to be chewed, so that the user can have the benefit of cleaning his teeth and entire mouth, and stimulating his gums anywhere without requiring a sink. The bristles (12, 14) are embedded on both sides of a thin, flat plastic core (10) such that the embedded portions (16) from opposite sides overlap to permit the core (10) to be made as thin as possible, with the bristles (12, 14) also being impregnated with a flavor ingredient and medication.

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DOUBLESIDED CHEWABLE ORAL BRUSH  
BACKGROUND OF THE INVENTION

The invention is in the field of dental care, and represents the further development on the part of the inventor from a brush which is disclosed in U.S. Patent No. 4,748,709, issued June 7, 1988.

The brush as described in the previously issued patent works quite well and fulfills the purpose for which it was intended, mainly, to permit the user to stimulate his gums, freshen his breath and clean his teeth while driving, on an airplane, or anyplace, without requiring a sink. In use, the brush is fully contained within the mouth, and may be discarded after a single use, or it can be re-used indefinitely, until the bristles wear out.

However, efficient and effective as the original brush concept was, difficulties were encountered in the attempt to manufacture the brush using modern mass production techniques. In a nutshell, it was difficult to make a brush which had tufts extending from virtually every part of a flattened cylinder core as described in that patent.

There is a need for a brush of the type generally described in that patent, but which could be produced according to current brush making techniques on an economical basis.

SUMMARY OF INVENTION

The instant invention fulfills the above stated need and comprises a brush which has no handle, and consists of a flattened rectangular core with bristles extending out both of the flattened sides.

In order to make the core as thin as possible, the groups of bristles on the opposite sides of the core are staggered from one side to the other and are embedded into the core so far that they overlap the other group embedded in from the other side to maximize the support that the core provides

the bristles while minimizing the necessary thickness of the core.

In the past, brushing techniques have been used, with a conventional toothbrush, to clean the teeth and stimulate the gums. With the instant invention, a new, modern technique is used, in which bristles are used to clean the chewing surfaces and stimulate the gums by the mechanical action of the bristles as they are compressed against the teeth and into the gums by chewing. A rigid central core holds stiff bristles rigidly enough to effectively work into the crevices of the chewing surfaces and gum lines as the brush is chewed.

#### BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 of the side elevation view of one embodiment of the invention;

Figure 2 is an elevation view from the left side of the brush as shown in Figure 1;

Figure 3 is an elevation view from the right side of the brush as shown in Figure 1;

Figure 4 is a section taken along line 4-4 of Figure 2;

Figure 5 is a section through the core with the bristles removed;

Figure 6 is a section taken along line 6-6 of Figure 3 with the bristles removed;

Figure 7 is a side elevation view of a second embodiment differing from the first embodiment in the number of bristle tufts;

Figure 8 is an elevation view from the left side of Figure 7;

Figure 9 is an elevation view from the right side of Figure 7;

Figure 10 represents yet another embodiment different from the other two in the number of bristle tufts;

Figure 11 is an elevation view from the left side of Figure 10; and

Figure 12 is an elevation view from the right side of the brush shown in Figure 10.

#### DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

There are three different embodiments illustrated in the drawings, differing from one another only in the number of bristle tufts mounted by the central core. Thus the description as applied to the embodiment illustrated in Figures 1 - 6 also applies to the other two embodiments except insofar as it pertains to the number of tufts or rows of tufts mounted in the core.

The brush has a core 10 which is generally rectangular in planform, and flattened as can be seen in Figures 1-6. It is desirable to make the core as small as possible in keeping with providing adequate support for the bristle tufts 12 and 14. Therefore, the planform dimension of the core is just large enough to mount the desired number of bristle tufts, which in the first embodiment is three rows on one side for a total of 15 tufts, and two rows on the other side for a total of 8 tufts.

In keeping with the idea of making the cores as small as possible, each of the tufts has a shank portion 16 which is inserted into the core. To minimize the necessary thickness of the core, the tuft shanks overlap one another as shown in Figure 1. The deep bores 18 in which the tufts are inserted are clearly shown in Figures 5 and 6. By so staggering the tufts 12 from the tufts 14 as shown, a very thin core can be used, so that the final brush product fits comfortably in the mouth without being made awkwardly large by the necessity of a thick core.

Although the bristles could all be the same length, in the preferred embodiment shown in Figures 1-6, the group of bristles 12 has shorter bristles than group 14. Bristles in group 12 are  $3/16$ " long in the preferred embodiment, and group 14 bristles are  $5/16$ " long. Thus if the core is  $3/16$ " thick as it is in the preferred embodiment, the total thickness is  $11/16$ ", or just under  $3/4$ " as it should be, as above  $3/4$ " the brush becomes increasingly awkward to fit in the mouth and use properly.

By providing bristles of different sizes, the user can rotate the brush in his mouth to achieve the optimal cleaning, massaging and stimulating action. The shorter bristles are, of course, slightly stiffer due to their shorter length, and are more appropriate for tooth chewing surfaces than the longer bristles 14 which are better for gums, and vice versa.

Conventional toothbrushes have nylon fiber bristles that are between 5 mils and 8 mils thick. The Nylon bristle filaments in the instant invention are preferably 12 mils thick. It is desirable to make them stronger than toothbrush bristles inasmuch as they take more crushing force and generally need more strength. Each tuft of bristles contains between 30 and 40 individual bristles. Obviously, tufts made with a smaller number of bristles will permit more tufts to be inserted in the same surface area and vice-versa.

The embodiment illustrated in Figures 1 - 6, having 15 tufts on one side and 8 on the other, is considered to be about the smallest size that is practical, although clearly one could make the brush even smaller with fewer rows and tufts, and could make the core smaller, as described below and shown in Figures 7-9, if desired.

The embodiments of Figures 8 - 9 and 11 - 12 represent different arrangements of bristle tufts. The embodiment in Figures 8 - 9 would be even smaller than the first embodiment, having only 9 tufts instead of 15 on one side, with the same 8 tufts on the other side. The core would have a planform dimension of about  $1/2"$  by  $1/2"$ . In all of the embodiments, the core remains the same  $3/16"$  thick, and the bristle lengths remain the same as in the first embodiment, so that the overall thickness of the brush remains a uniform  $11/16"$ .

The last embodiment of Figures 10 - 12 has 15 tufts on one side, and a second pair of rows has been added on the smaller side so that the total is 16 tufts. The core would have a planform dimension of about  $3/4" \times 3/4"$ . When making

this large brush, care would have to be taken to ensure that the overall size does not interfere with it's appropriate use.

Lastly, it is important that the bristles be impregnated with a flavor ingredient, such as mint, and ideally with medication as well to help reduce the bacteria count in the mouth.

In any of the embodiments, the brush provides an ideal dental hygiene device which can be used anywhere and anytime, and which can conveniently be used immediately after meals no matter where the user happens to be to maximize the benefits of cleaning the mouth. An entirely different technique of mouth cleaning is made available without the erosive effects of conventional brushing, wherein the axial compression of the bristles against the teeth and gums achieve the cleaning action.

Because of the pleasant taste of the flavor substance added to the bristles, chewing the brush would be a pleasant pastime and no doubt some people would find it a soothing habit, much like chewing gum, but without the oral health detriment that at least non-sugar free chewing gum presents.

#### I CLAIM:

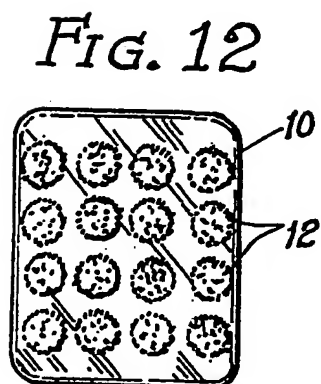
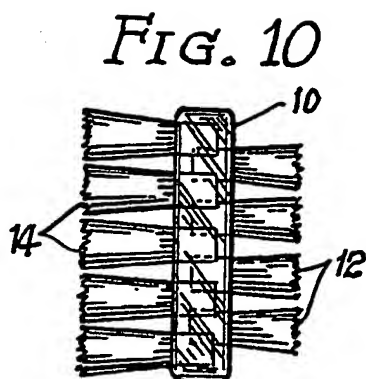
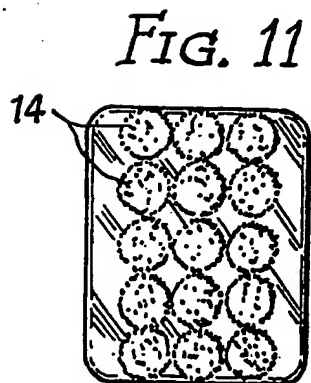
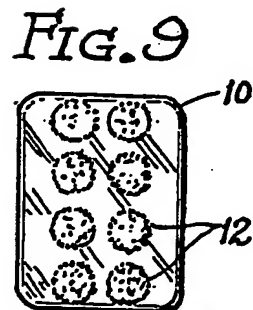
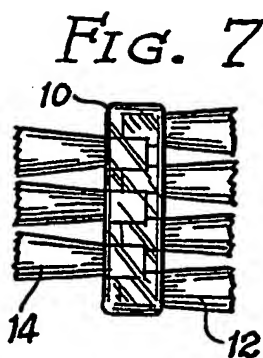
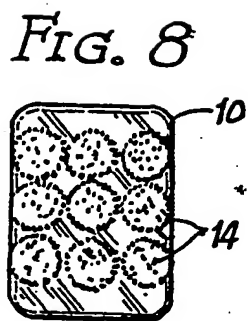
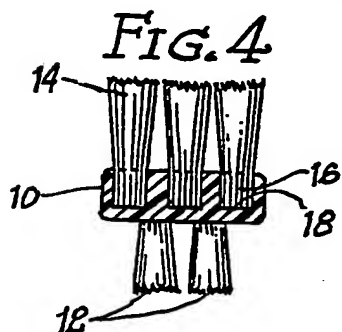
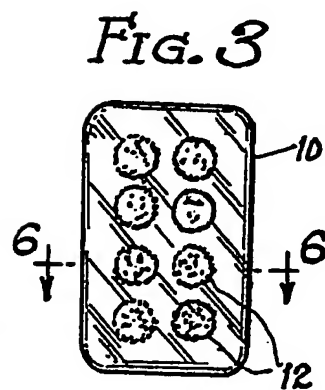
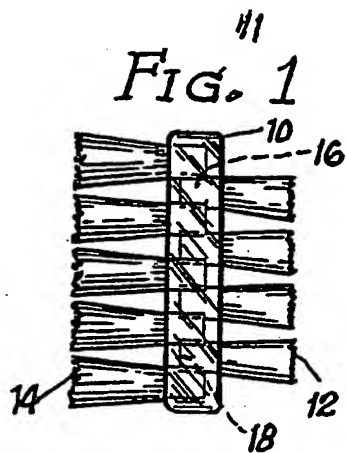
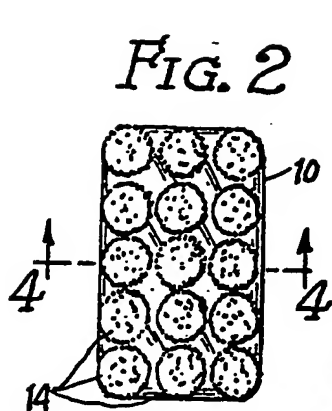
1. A brush comprising
  - (a) a central core;
  - (b) a first group of bristles arranged in tufts and being embedded on one side of said core; and
  - (c) a second group of bristles arranged in tufts and being embedded in the opposite side of said core from said first group of said bristles and extending substantially the opposite direction therefrom.
2. Structure according to Claim 1 wherein said core is flattened to define two broad, substantially parallel sides and said first and second groups of bristles are embedded respectively in said substantially parallel sides.
3. Structure according to Claim 2 wherein said tufts each have a shank portion embedded in said core, and each of said shank portions extends axially into said core so far that it overlaps shank portions of tufts embedded into the opposite side of said core.
4. Structure according to Claim 1 wherein one of said groups of bristles extends out from said core further than the other said groups of bristles.
5. Structure according to Claim 4 wherein one of said groups of bristles extends from said core on the order of  $3/16$ " and the other of said groups of bristles extends from said core on the order of  $5/16$ ".
6. Structure according to Claim 1 wherein one side of said core mounts more rows of bristles than the other side of said core.
7. Structure according to Claim 6 wherein one of said groups of bristles comprises three rows of bristle tufts and the other of said groups of bristles comprises two rows of bristle tufts.



8. Structure according to Claim 7 wherein the bristle tufts of said first group are staggered with respect to the bristle tufts of said second group such that their shanks can axially overlap.


9. Structure according to Claim 1 wherein said core is substantially parallelopiped sheet.

10. Structure according to Claim 1 wherein said bristles are impregnated with a flavor substance.



# INTERNATIONAL SEARCH REPORT

International Application No. **PCT/US89/00964**

<b>I. CLASSIFICATION OF SUBJECT MATTER</b> (if several classification symbols apply, indicate all) <sup>6</sup>		
According to International Patent Classification (IPC) or to both National Classification and IPC		
IPC(4): <b>A46B 9/04</b>		
U.S. CL. <b>15/104.93</b>		
<b>II. FIELDS SEARCHED</b>		
Minimum Documentation Searched <sup>7</sup>		
Classification System	Classification Symbols	
U.S.	15/104.92, 104.93, 104.94, 167.1, 167.2, 191.R, DIG. 5 128/62.A	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched <sup>8</sup>		
<b>III. DOCUMENTS CONSIDERED TO BE RELEVANT</b> <sup>9</sup>		
Category <sup>10</sup>	Citation of Document, <sup>11</sup> with indication, where appropriate, of the relevant passages <sup>12</sup>	Relevant to Claim No. <sup>13</sup>
X	U.S. A, 4,346,493 (GOUDRETT) 31 August 1982 See Fig. 2	1, 2
X	U.S. A, 4,517,701 (STANDFORD, JR) 21 May 1985 See Figs. 5a, 5b	1, 2, 3
X Y	U.S., A, 4,731,896 (de LA TOUR) 22 March 1988 See Figs. 1 and 2	<u>1, 2, 4</u> 5
X	U.S., A, 4,748,709 (OATES) 07 June 1988	1, 2, 9, 10
X	FR, A, 2,487,668 (COHEN) 05 February 1982	1, 2
X= Y	DE, A, 2,312,318 (LOCHER) 3 October 1974 See Figs. 2, 5, 5a, 12, 14, 19	<u>1, 2, 3, 4,</u> 5, 6, 7, 8
X	U.S., A, 2,778,045 (ELY ET AL) 22 January 1957	1
X	U.S., A, 3,853,412 (GRIFFIN) 10 December 1974	1
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<b>IV. CERTIFICATION</b>		
Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report	
11 April	05 JUN 1989	
International Searching Authority	Signature of Authorized Officer	
ISA/US	 Peter Feldman	